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Amendment and Response

Applicant: R. Glen Coleman

Serial No.: 10/600,871

Filed: June 20, 2003

Docket No.: M190.254.101/PD-170.02

Title: FOCUSED ULTRASOUND ABLATION DEVICES HAVING SELECTIVELY ACTUABLE EMITTING ELEMENTS AND METHOD OF USING THE SAME

IN THE CLAIMS

1. (Previously Presented) A focused ultrasound ablation device for creating a lesion in tissue of a patient comprising:

an ultrasound emitting member having a plurality of individual ultrasound emitting elements spaced from one another, the ultrasound emitting elements being actuatable to emit ultrasound energy a predetermined distance outwardly from an active surface whereby the ultrasound energy is focused within tissue of the patient at separate and distinct locations for each individual ultrasound emitting element to form a lesion, the ultrasound emitting elements being selectively, independently actuatable to emit ultrasound energy and being selectively, independently non-actuatable to not emit ultrasound energy whereby a lesion of selected size and configuration is formed in accordance with the positions of the ultrasound emitting elements selected to be actuated; and

a handle coupled to said ultrasound emitting member.

2. (Previously Presented) The device of claim 1 wherein the ultrasound emitting elements each include a piezoelectric element that emits ultrasound energy in response to electric current selectively supplied thereto.

3. (Previously Presented) The device of claim 2 wherein the piezoelectric elements are curved to effect focusing of the ultrasound energy a predetermined distance outwardly from the active surface.

4. (Previously Presented) The device of claim 1 wherein the handle has a sufficient length to position the ultrasound emitting member adjacent tissue in the patient while the handle is maintained external of the patient.

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5. (Previously Presented) The device of claim 1 wherein the handle includes a malleable shaft.
6. (Previously Presented) The device of claim 1 wherein the handle has a configuration to facilitate grasping by a surgeon or other operator.
7. (Previously Presented) The device of claim 1 wherein the handle includes one or more controls or switches.
8. (Previously Presented) The device of claim 7 wherein the one or more controls or switches actuate the emission of ultrasound energy from the ultrasound emitting elements.
9. (Previously Presented) A focused ultrasound ablation device for creating a lesion within tissue of a patient comprising:
 - a handle; and
 - an ultrasound emitting member coupled to the handle, the ultrasound emitting member comprising an active face adapted for positioning adjacent an area of tissue, the active face carrying one or more rows of spaced apart ultrasound transducer elements, the ultrasound transducer elements selectively, independently actuatable to emit focused ultrasound energy focused a predetermined distance from the active face and focused at separate and distinct locations for each individual ultrasound transducer element such that the area of tissue adjacent the active face is heated by the focused ultrasound energy to create the lesion within tissue of the patient.
10. (Previously Presented) The device of claim 9 wherein each of the ultrasound transducer elements includes a piezoelectric element.

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11. (Previously Presented) The device of claim 9 further comprising a power supply coupled to said ultrasound emitting member for generating an electric signal capable of actuating the ultrasound transducer elements to emit focused ultrasound energy.
12. (Previously Presented) The device of claim 11 further comprising a control unit coupled with the ultrasound emitting member for connecting selected ones of said ultrasound transducer elements with the electrical signal.
13. (Previously Presented) The device of claim 9 wherein the handle includes an elongate shaft.
14. (Previously Presented) The device of claim 9 wherein the ultrasound emitting elements each include a piezoelectric element that emits ultrasound energy in response to electric current selectively supplied thereto.
15. (Previously Presented) The device of claim 14 wherein the piezoelectric elements are curved to effect focusing of the ultrasound energy a predetermined distance outwardly from the active surface.
16. (Previously Presented) The device of claim 9 wherein the handle has a sufficient length to position the ultrasound emitting member adjacent tissue in the patient while the handle is maintained external of the patient.
17. (Previously Presented) The device of claim 9 wherein the handle includes a malleable shaft.
18. (Previously Presented) The device of claim 9 wherein the handle has a configuration to facilitate grasping by a surgeon or other operator.

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19. (Previously Presented) The device of claim 9 wherein the handle includes one or more controls or switches.
20. (Previously Presented) The device of claim 19 wherein the one or more controls or switches are for actuation to emit ultrasound energy from the ultrasound emitting elements.
21. (Previously Presented) A method of creating an ablation lesion within tissue of a patient comprising:
- grasping a handle coupled to an ultrasound emitting member;
 - selecting one or more of a plurality of ultrasound emitting elements, arranged in an array on an active face of the ultrasound emitting member, for actuation to emit ultrasound energy;
 - positioning the active face adjacent tissue of the patient;
 - actuating the selected one or more ultrasound emitting elements to emit ultrasound energy;
 - focusing the ultrasound energy with the selected one or more of the ultrasound emitting elements so that the ultrasound energy is focused a predetermined distance from the active face and focused at separate and distinct locations for each individual ultrasound emitting element;
 - and
 - heating the tissue with the focused ultrasound energy to create the ablation lesion.
22. (Previously Presented) The method of claim 21 wherein the ultrasound emitting elements emit ultrasound energy in response to an electrical signal supplied thereto and the step of actuating includes electrically coupling the selected one or more of the ultrasound emitting elements with an electrical signal source.
23. (Previously Presented) The method of claim 22 wherein the step of electrically coupling includes electrically coupling the selected one or more of the ultrasound emitting elements with a power supply producing the electrical signal.

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24. (Previously Presented) The method of claim 21 wherein the step of selecting includes selecting a plurality of ultrasound emitting elements to form a continuous lesion.

25. (Previously Presented) The method of claim 21 wherein the step of selecting includes selecting a plurality of ultrasound emitting elements to form a discontinuous lesion.

26. (Previously Presented) The method of claim 21 wherein the step of selecting includes selecting a plurality of ultrasound emitting elements to form a lesion comprising a plurality of disconnected lesion segments.

27. (Previously Presented) The method of claim 21 wherein the handle has a sufficient length for positioning the active face adjacent tissue within the patient while the handle is maintained external of the patient.